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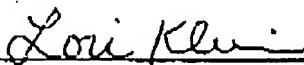
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Serial No.: 10/563,385
Docket No.: PU030023
Art Unit: 2617
Examiner: Christopher M. Brandt

Appeal Brief (19 pages)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants: Jun Li et al.

Examiner: Brandt, Christopher M.

Serial No: 10/563,385

Group Art Unit: 2617

Filed: January 5, 2006

Docket: PU030023

For: OVERLAY MICRO CELL STRUCTURE FOR UNIVERSAL MOBILE TELEPHONE SYSTEM NETWORK

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APPEAL BRIEF

Applicants appeal the status of claims 1-12 as presented in response to the Office Action dated May 3, 2007, and finally rejected in the Office Action dated October 17, 2007 pursuant to the Notice of Appeal filed December 17, 2007 and submit this appeal brief.

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A. Introduction

B. Whether claim 1 is Unpatentable Under 35 U.S.C. §103(a) over Hunt in view of Copley

B1. Claim 1 is patentable and non-obvious over Hunt in view of Copley, as configuring the communications channel between a macro cell and a pico cell of the Hunt system to be a wireless channel would change the principle of operation of Hunt.

B2. Claim 1 is patentable over Hunt in view of Copley because configuring the Hunt system to transmit signaling information to a pico cell in response to access of the pico cell by a mobile communications device would also change the principle of operation of Hunt.

C. Whether claim 6 is Unpatentable Under 35 U.S.C. §103(a) over Hunt in view of

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Copley

C1. Hunt and Copley fail to disclose or render obvious a third wireless communication channel employed to directly communicate signaling information between a macro cell and a micro cell in response to access of the micro cell by a mobile communications device, claim 6 is patentable over the references.

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1. Real Party in Interest

The real party in interest is THOMSON LICENSING, the assignee of the entire right title and interest in and to the subject application by virtue of assignments recorded with the Patent Office on January 5, 2006 at reel/frame 017452/0346 and reel/frame 017452/0465.

2. Related Appeals and Interferences

None.

3. Status of Claims

Claims 1-12 are pending. Claims 1-12 stand rejected and are under appeal.

A copy of the claims 1-12 is presented in Section 8 below.

4. Status of Amendments

A preliminary amendment filed on January 5, 2006 was entered. An amendment under 37 CFR §1.111, sent to the PTO on October 27, 2006 in response to the non-final Office Action dated August 3, 2006, was entered. An amendment under 37 C.F.R. §1.116, sent to the PTO on March 1, 2007 in response to the Final Office Action dated January 4, 2007, was entered upon the filing of a Request for Continued Examination on April 5, 2007. An amendment 37 CFR §1.111, sent to the PTO on July 23, 2007 in response to the non-final Office Action dated May 3, 2007, was entered. No Responses/Amendments were filed subsequent to the above Amendment sent on July 23, 2007.

5. Summary of Claimed Subject Matter

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Claim 1 is directed to a method for achieving wireless communications in a network having at least one macro cell (e.g., element 14, FIG. 1) for communicating both voice and data with a mobile communications device (e.g., element 16, FIG. 1) across a first wireless link (e.g., element 17, FIG. 1) and, at least one micro cell (e.g., element 32, FIG. 1), with a smaller coverage area and higher capacity per user than the macro cell (see e.g., p. 4, lines 10-16), for communicating data with the mobile communications device across a second wireless communication link (e.g., element 33, FIG. 1), the method comprising the steps of: communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel (e.g., element 50, FIG. 1) in response to access of the micro cell by the mobile communications device (see, e.g., p. 4, line 31 to p. 5, line 17); and controlling the operation of the micro cell responsive to the signaling information (see, e.g., p. 5, lines 2-7).

Claim 6 is directed to a wireless communications system, comprising at least one macro cell (e.g., element 14, FIG. 1) for communicating both voice and data with a mobile communications device (e.g., element 16, FIG. 1) across a first wireless link (e.g., element 17, FIG. 1); at least one micro cell (e.g., element 32, FIG. 1) having a smaller coverage and higher capacity per user than the macro cell (see e.g., p. 4, lines 10-16) for communicating data with the mobile communications device across a second wireless communication link (e.g., element 33, FIG. 1); a control element (e.g., element 22, FIG. 1) for controlling at least the operation of the macro cell (see, e.g., p. 5, lines 2-7); and a third wireless channel (e.g., element 50, FIG. 1) for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell (see, e.g., p. 4, line 31 to p. 5, line 17).

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Claim 1 is directed to a method for achieving wireless communications in a network having at least one macro cell (e.g., element 14, FIG. 1) for communicating both voice and data with a mobile communications device (e.g., element 16, FIG. 1) across a first wireless link (e.g., element 17, FIG. 1) and, at least one micro cell (e.g., element 32, FIG. 1), with a smaller coverage area and higher capacity per user than the macro cell (see e.g., p. 4, lines 10-16), for communicating data with the mobile communications device across a second wireless communication link (e.g., element 33, FIG. 1), the method comprising the steps of: communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel (e.g., element 50, FIG. 1) in response to access of the micro cell by the mobile communications device (see, e.g., p. 4, line 31 to p. 5, line 17); and controlling the operation of the micro cell responsive to the signaling information (see, e.g., p. 5, lines 2-7).

Claim 6 is directed to a wireless communications system, comprising at least one macro cell (e.g., element 14, FIG. 1) for communicating both voice and data with a mobile communications device (e.g., element 16, FIG. 1) across a first wireless link (e.g., element 17, FIG. 1); at least one micro cell (e.g., element 32, FIG. 1) having a smaller coverage and higher capacity per user than the macro cell (see e.g., p. 4, lines 10-16) for communicating data with the mobile communications device across a second wireless communication link (e.g., element 33, FIG. 1); a control element (e.g., element 22, FIG. 1) for controlling at least the operation of the macro cell (see, e.g., p. 5, lines 2-7); and a third wireless channel (e.g., element 50, FIG. 1) for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell (see, e.g., p. 4, line 31 to p. 5, line 17).

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6. Grounds of Rejection to be Reviewed on Appeal

Claims 1-6 and 8-11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2003/0013452 A1 to Hunt et al. (hereinafter 'Hunt') in view of U.S. Patent Publication No. 2003/0003917 A1 to Copley et al. (hereinafter 'Copley').

Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Hunt in view of Copley and in further view of U.S. Patent No. 6,058,302 to Westerberg (hereinafter 'Westerberg').

Claim 12 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Hunt in view of Copley, in further view of Westerberg and in further view of U.S. Patent No. 6959048 to Horneman et al. (hereinafter 'Horneman').

Regarding the grouping of the claims, claims 2-5 stand or fall with claim 1, due to their respective dependencies, and claims 7-12 stand or fall with claim 6, due to their respective dependencies.

7. Argument

A. Introduction

In general, the present principles are directed to providing a mobile device with a high-speed wireless communication connection. According to aspects of the present principles, a wireless device, such as a cellular telephone, may obtain voice and data communications service through either or both a conventional radio access node (hereinafter a 'macro cell') (e.g., Specification, element 14, FIG. 1) and a high-bandwidth access node (hereinafter a 'micro cell') (e.g., Specification, element 32, FIG. 2), which has a smaller coverage area and higher communications capacity per user than a macro cell (see, e.g., Specification, p. 4, lines 4-16). The micro cell enables

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users to access a wide area network, such as the internet (see, e.g., Specification, elements 32, 32, 38 and 40, FIG. 1; p. 3, lines 29-31; p. 4, lines 10-24).

In one advantageous implementation of the present principles, the micro cell connects to the wide area network through a link separate from the main radio access network of a wireless service provider (see e.g., Specification, FIG. 1, depicting the micro-cell link to the wide area network, 34, 38, as being separate from the main radio access network, 18, 20, 22 and 24). This aspect permits the provision of a high-speed connection to the wide area network without congesting the main radio access network with high-bandwidth data traffic. Additionally, although a wide area network may be utilized to transmit high-bandwidth data through micro cells, according to another aspect, the radio access network securely identifies and authenticates a wireless device by employing control signals through a direct wireless channel between one of its macro cell terminals and a micro cell upon access of the micro cell by a wireless device (see, e.g., Specification, p. 4, line 31 to p. 5, line 4; and p. 5, lines 12-19).

Independent claims 1 and 6 of the present application include the feature of communicating signaling information between a macro cell and a micro cell via a third wireless channel. Furthermore, independent claims 1 and 6 also include the feature of communicating the signaling information in response to access of the micro cell by a wireless device. The references cited by the Examiner do not disclose or render obvious either of these features. Thus, claims 1 and 6 are patentably distinct and non-obvious over the cited references, as discussed herein below. As such, claims 1 and 6 are presented for review in this appeal.

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B. Whether claim 1 is Unpatentable Under 35 U.S.C. §103(a) over Hunt in view of Copley

Claim 1 is patentable over Hunt and Copley, taken singly or in combination, as the references fail to disclose or render obvious several features of claim 1. Claimed subject matter is unpatentable under 35 U.S.C. 103(a) "if the differences between the subject matter sought to be protected and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." KSR International Co. v. Teleflex, Inc., 127 S.Ct. 1727, 1734 (quoting 35 U.S.C. 103(a)). The subject matter of claim 1 includes:

A method for achieving wireless communications in a network having at least one macro cell for communicating both voice and data with a mobile communications device across a first wireless link and, at least one micro cell, with a smaller coverage area and higher capacity per user than the macro cell, for communicating data with the mobile communications device across a second wireless communication link, the method comprising the steps of:

communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device; and

controlling the operation of the micro cell responsive to the signaling information.

(emphasis added).

Hunt and Copley, taken singly or in combination, do not disclose or render obvious at least the claim feature of "communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device." First, claim 1 is not obvious over the references because configuring a wireless communications link between a macro cell and a pico cell within the Hunt system would

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change the principle of operation of the Hunt system. Second, claim 1 is not obvious over the references, as modifying the Hunt system to communicate signaling information between a macro cell and a pico cell in response to access of a pico cell by a wireless device would also change the principle of operation of the Hunt system. Accordingly, claim 1 is patentable over Hunt and Copley.

B1. Claim 1 is patentable and non-obvious over Hunt in view of Copley, as configuring the communications channel between a macro cell and a pico cell of the Hunt system to be a wireless channel would change the principle of operation of Hunt.

Implementing a third wireless link between a macro cell and a pico cell within the Hunt system would change the principle of operation of the Hunt system, claim 1 is patentable over Hunt and Copley, taken singly or in combination. If the proposed modification or combination of the prior art would change the principle of operation or would require a substantial reconstruction and redesign of the elements shown in the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. See MPEP §2143.01(VI) (citing In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

Hunt discloses a hierarchical radio communications system employing a macro cell (Hunt, 104, FIG. 2) and a series of pico cells (Hunt, 108, FIG. 2) serving small areas within the coverage area of the macro cell (Hunt 104, FIG. 2). A pico cell provides high bit rate services that could not be carried by the macro cell (Hunt, para. 5). In the hierarchical system described in Hunt, control information is transmitted continuously to a wireless device through a macro cell while user-data requiring a high bandwidth capacity is transmitted to the wireless device through a corresponding pico cell (see, e.g., Hunt, Abstract; para. 22-24). However, unlike aspects of the present principles

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discussed above, wherein high bandwidth user-data is transmitted to a micro cell through a wide-area network outside the main radio access network, the pico cell of the Hunt system receives the user-data directly from the macro cell through a communications link (Hunt, para. 28).

In addition, Hunt fails to disclose that the medium of the communications link between a macro cell and a pico cell is wireless. Moreover, implementation of a wireless link between a macro cell and the pico cell in the Hunt system would require a substantial reconstruction and redesign of the Hunt system. As discussed above, the purpose of the pico cell is to provide a high bit rate connection that the macro cell cannot support. If the macro cell is configured to transmit user-data to the pico cell through a wireless link at a high bit rate, then the macro cell would essentially be capable of performing the function of the pico cell. This would obviate the need for the pico cells entirely, as the macro cell would have the capacity to provide a high bit rate connection to the wireless devices itself. Thus, configuring the communications link between a macro cell and the pico cell to be a wireless channel would change the principle of operation of Hunt and would require a substantial reconstruction and redesign of the Hunt system.

Furthermore, Copley discloses a wireless link between a base station and a building interface to extend a base station's coverage within a building (see, e.g., Copley, Abstract; paragraphs 3, 8 and 21). However, Copley does not disclose or render obvious a communications channel between macro cells and micro cells that provide a higher bit rate connection to a wireless device. Moreover, combination of Hunt and Copley does not render obvious the feature of communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel, as recited in claim 1, because modifying the link between a macro cell and a pico cell of Hunt to be a wireless channel would require substantial reconstruction and redesign and would change the principle of operation of the Hunt system, as discussed above.

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Accordingly, claim 1 is patentable and non-obvious over Hunt and Copley. In addition, “[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)). Therefore, claims 2-5 are also patentable over Hunt and Copley due at least to their dependencies on claim 1. Withdrawal of the rejection is respectfully requested.

B2. Claim 1 is patentable over Hunt in view of Copley because configuring the Hunt system to transmit signaling information to a pico cell in response to access of the pico cell by a mobile communications device would also change the principle of operation of Hunt.

Modifying the Hunt system to communicate signaling information directly between a macro cell and a pico cell in response to access of the pico cell by a wireless device would change its principle of operation, claim 1 is patentable and non-obvious over Hunt in view of Copley. If the proposed modification or combination of the prior art would change the principle of operation or would require a substantial reconstruction and redesign of the elements shown in the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. See MPEP §2143.01(VI) (citing *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

The principle of operation of the Hunt system is to separate wireless communication service between a macro cell and a pico cell so that control data is transmitted to a wireless device through a macro cell and user-data is transmitted to the wireless device through a pico cell (see Hunt, Abstract). Hunt teaches that control data is transmitted to a wireless device via macro cells instead of pico cells because control data must be transmitted continuously and a user’s movement may require frequent handover of service between pico cells due to their small coverage areas (see, e.g.,

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Hunt, paras. 2-3 and 22-24). Frequent handover between pico cells may interrupt the transmission of control information to a wireless device.

Firstly, although Hunt describes transmission of signaling information between a macro cell and a pico cell in response to a scan for connection suitability and a response to a request for data (see, e.g., Hunt, paragraphs 31 and 29-30), Hunt does not disclose that signaling information is communicated between a macro cell and a pico cell in response to access of the pico cell to the wireless device.

Secondly, modifying the Hunt system to communicate control signals between a macro cell and a pico cell in response to access of the pico cell by the wireless device would change the principle of operation of the Hunt system. Signaling information communicated in response to access of the pico cell by a wireless device includes, for example, signals transmitted to control access authorization and authentication of a wireless device upon its access to a pico cell. As discussed above, in accordance with the principle of operation of Hunt, these types of control signals are transmitted directly from a macro cell to a wireless device. Thus, because directly transmitting such signals between a macro cell and a wireless device is a principle of operation of Hunt, modifying the Hunt system to communicate control signals between a macro cell and a pico cell in response to access of the pico cell by the wireless device would change a principle of operation of Hunt. Accordingly, claim 1 is patentable over Hunt.

In addition, Copley concerns utilization of a building interface station between a wireless device and a base station to expand the coverage area of the base station into a building (see Copley, abstract). Copley does not disclose or render obvious the claim 1 feature of communicating signaling information directly a macro cell and a micro cell with a higher bandwidth capacity in response to access of the micro cell by a wireless device. Moreover,

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combination of Hunt and Copley does not render obvious the feature of communicating signaling information directly between one micro cell and one macro cell in response to access of the microcell by a mobile communications device, as recited in claim 1, because modifying the Hunt system to transmit such control signals from a macro cell to a pico cell would change its principle of operation, as discussed above.

Furthermore, “[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)). Therefore, claims 2-5 are also patentable over Hunt and Copley due at least to their dependencies on claim 1. Withdrawal of the rejection is respectfully requested.

C. Whether claim 6 is Unpatentable Under 35 U.S.C. §103(a) over Hunt in view of Copley

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D. Conclusion

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At least the above-identified limitations of the pending claims are not disclosed or suggested by the teachings of Hunt and/or Copley. Accordingly, it is respectfully requested that the Board reverse the rejection of Claim 1-12 under 35 U.S.C. §103(a).

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Respectfully submitted,
Jun Li et al.

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January 18, 2007

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8. CLAIMS APPENDIX

1. (Previously Presented) A method for achieving wireless communications in a network having at least one macro cell for communicating both voice and data with a mobile communications device across a first wireless link and, at least one micro cell, with a smaller coverage area and higher capacity per user than the macro cell, for communicating data with the mobile communications device across a second wireless communication link, the method comprising the steps of:

communicating signaling information directly between one micro cell and the one macro cell via a third wireless channel in response to access of the micro cell by the mobile communications device; and

controlling the operation of the micro cell responsive to the signaling information.

2. (Original) The method according to claim 1 wherein step of controlling the micro cell includes the step of managing access to the micro cell by the mobile communications device.

3. (Original) The method according to claim 1 wherein the step of communicating signaling information via the third wireless channel includes the step communicating signaling information from each mobile communications device separately.

4. (Original) The method according to claim 1 wherein the step of communicating signaling information via the third wireless channel includes the step of encapsulating signaling information from a plurality of mobile communication devices in a common packet.

5. (Original) The method according to claim 1 further comprising the step of assigning to the mobile communication device codecs and power settings to enable the mobile communication device to communicate with macro cell and micro cell simultaneously.

6. (Previously Presented) A wireless communications system, comprising:
at least one macro cell for communicating both voice and data with a mobile communications device across a first wireless link;

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at least one micro cell having a smaller coverage and higher capacity per user than the macro cell for communicating data with the mobile communications device across a second wireless communication link;

a control element for controlling at least the operation of the macro cell; and
a third wireless channel for directly communicating signaling information between the one micro cell and the one macro cell in response to access of the micro cell by the mobile communications device to enable the controller to also control the operation of the macro cell.

7. (Original) The system according to claim 6 wherein the control element comprises a Service General Packet Radio Service Node (SGSN).

8. (Original) The system according to claim 6 wherein the control element manages access to the micro cell by the mobile communications device.

9. (Original) The system according to claim 6 wherein each micro cell separately communicates signaling information from each mobile communication device across the third wireless channel.

10. (Original) The system according to claim 6 wherein the signaling information of each of a plurality of micro cells is encapsulated into a common packet for communication across the third wireless communication channel.

11. (Original) The system according to claim 6 wherein the control element assigns to the mobile communication device codes and power settings to enable the mobile communication device to communicate with macro cell and micro cell simultaneously.

12. (Original) The system according to claim 7 wherein the control element further comprises:

a Gateway General Packet Radio Service Serving Node (GGSN); and
an Internet Protocol tunnel for linking the GGSN to an Internet Protocol gateway.

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9. RELATED EVIDENCE APPENDIX

None.

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10. RELATED PROCEEDINGS APPENDIX

None